

REMARKS

In connection with Applicants Request for Continued Examination (RCE), Applicants respectfully request entry of the foregoing and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.114, and in light of the remarks which follow.

Claims 1-7 and 9-24 are pending in the application, Claim 8 having been canceled above, and new Claims 19-24 added above.

By the above amendments, Claim 1 is amended to further clarify the steps of the claimed dehydrofluorination process. Support for this amendment can be found at least at original Claims 1 and 8. Applicants amended Claim 2 so that it is more consistent with the language of Claim 1. Because Applicants incorporated the features of Claim 8 into Claim 1, Applicants cancelled Claim 8. Applicants amended Claim 10 to correct a minor typographical error. Applicants also amended Claim 14 to correct minor typographical errors. Support for this amendment can be found at least at page 7 of the specification. Applicants amended Claim 15 to be more consistent with Claim 1. Applicants also amended Claims 17 and 18 to recite gradually introducing the carbamoyl fluoride in a dissolved or finely disposed state. Support for this amendment can be found at least at page 6, lines 8-9; and pages 14-15 of the specification. Finally, Applicants added new Claims 19-24 to further define exemplary embodiments. As many of Applicant's amendments only clarify the claims or modify their format, many of the amendments do not narrow the scope of the claims. Claims amended for purposes of clarification or format should, of course, be accorded their full range of equivalents.

Turning now to the Final Official Action, Claims 1-8 and 10-17 stand rejected under 35 U.S.C. §102(b) as being anticipated by GB 955,898. For at least the reasons that follow, withdrawal of the rejection is in order.

Claim 1, as amended above, recites a dehydrofluorination process to convert an aromatic carbamoyl fluoride to the corresponding isocyanate, the process comprising gradually introducing carbamoyl fluoride in a dissolved or finely dispersed state in a solvent into a solvent heel at a temperature of at least 80°C. (Emphasis added.)

The Official Action takes the position that GB '898 teaches that carbamic acid fluoride, an intermediate, is converted to p-trifluormethylphenyl isocyanate in the presence of xylene and hydrofluoric acid. Thus, the Official Action concludes that GB '898 teaches each and every aspect of the rejected claims. (See Final Official Action at page 3.)

GB '898 relates to a process for the production of carbamic acid fluorides or isocyanates substituted by fluorine on aliphatic carbon atoms. (See GB '898 at page 1, lines 1-9).

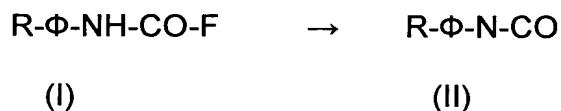
It is well established that in order to demonstrate anticipation under §102(b), each feature of the claim at issue must be found, either expressly described or under the principles of inherency, in a single prior art reference. (See Kalman v. Kimberly-Clark Corp., 218 U.S.P.Q. 789 (Fed. Cir. 1983).) That is not the case here.

For example, as recited in Claim 1, a dispersion is obtained in the claimed process by gradually introducing carbamoyl fluoride in a dissolved or finely dispersed state in a solvent into a solvent heel at a temperature of at least about 80°C. As previously explained, the instant specification at page 2, lines 8-18, discloses that

GB '898 indicates the possibility of converting carbamoyl fluoride to isocyanate in Example 1. However, the technique used in GB '898 results in a very low yield of only 35%. (Emphasis added.) Thus, the reaction of GB '898 is clearly very different from the claimed reaction, and results in unwanted heavy products described as resins. In stark contrast, the claimed dehydrofluorination process uses carbamoyl fluoride in a dissolved or finely dispersed state and obtains a dispersion by gradually adding the carbamoyl fluoride in a solvent at a selected reaction temperature. As explained in the specification at page 3, lines 13-18, "the finely dispersed nature or the dissolved nature of the carbamoyl fluoride at a temperature where it is reactive plays a key role in the production of isocyanate with a good yield."

Clearly, GB '898 does not disclose or suggest a process that includes the combination of features recited in Claim 1 because GB '898 does not achieve the high yield realized by the claimed process. Accordingly, Applicants submit that Claim 1 cannot be deemed anticipated by GB '898 because GB '898 clearly does not expressly or inherently describe each feature of Claim 1.

The claimed dehydrofluorination process proceeds as follows:

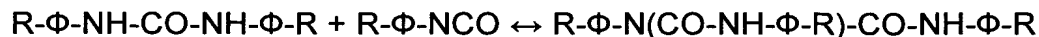


The reaction is carried out in a solvent which dissolved the substrate (I).

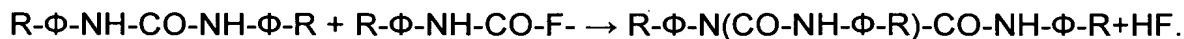
Applicants have found that during the reaction side products such as "biuret" are formed. Without being bound to any theory, Applicants believe that the biuret could result from the sequence of the following reactions:



Then reaction with the formed isocyanate or with other carbamoyl fluoride is believed to transformation of uree into biuret:



(this reaction is reversible partially) or:



In order to avoid the formation of side products, Applicants process comprises gradually introducing carbamoyl fluoride in a dissolved or finely dispersed state in a solvent into a solvent heel at a temperature at least equal to 80°.

Applicants have discovered that this process leads to high yields and avoids side reactions that can produce unwanted side products.

By introducing carbamoyl fluoride in a solvent gradually, Applicants can provide a low concentration of carbamoyl fluoride in the medium, thereby avoiding side reactions. In addition, carbamoyl fluoride is introduced in a solvent at an elevated temperature so that the carbamoyl fluoride is quickly transformed into a isocyanate.

During gradual introduction of the carbamoyl fluoride, in the claimed process, the ratio of HF (hydrofluoric acid) to carbamoyl fluoride is at least equal to 2, advantageously 3, and preferably to 4. (See for example, the instant specification at page 5, lines 7-11.) In contrast, the quantity of HF is low at the end of the process. When the carbamoyl fluoride is added to the hot solvent, HF is eliminated. Thus, the ratio of HF to isocyanate groups is at most equal to 5, preferably at most equal to 0.3, and more preferably at most equal to 0.1. (See for example, the specification at page 6, line 1-9).

Again, Applicants submit that because GB '898 does not disclose or suggest all of the features of Claim 1, and does not appreciate that the combination of features claimed can achieve a much higher yield, GB '898 cannot anticipate Claim 1.

For at least the above reasons, Applicants submit that Claim 1 is patentable over GB '898. The remaining Claims (2-8 and 10-15) depend, either directly or indirectly, from independent Claim 1, and are therefore also patentable over GB '898 for at least the reasons that Claim 1 is patentable. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over GB '898. For at least the reasons that follow, withdrawal of the rejection is in order.

To establish a *prima facie* case of obviousness, the prior art references (or references when combined) must teach or suggest all of the claim features. (See *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974).) In addition, "all words in a claim must be considered in judging the patentability of that claim against the prior art." (See *In re Wilson*, 424 F.2d 1382, 1385; 165 U.S.P.Q. 494, 496 (CCPA 1970); and MPEP §2143.03.)

Because Claim 9 depends from Claim 1, Claim 9 necessarily includes all of the features of Claim 1. Thus, Claim 9 is patentable over GB '898 for at least the reasons that Claim 1 is patentable thereover. Specifically, GB '898 fails to disclose or suggest a dehydrofluorination process, which includes the recited combination of steps. Specifically, the process of GB '898 does not disclose or suggest using carbamoyl fluoride in a dissolved or finely dispersed state and gradually adding the carbamoyl fluoride in a solvent into a solvent heel at a temperature of at least 80°C.

Because the process of GB '898 does not achieve the high isocyanate yield realized by the process claimed, Applicants submit that GB '898 fails to disclose or suggest the recited combination of features.

Furthermore, GB '898 does not reflect a proper consideration of "all words" in the claim (including all of the words of Claim 1, from which Claim 9 depends). In particular, because GB '898 neither discloses nor suggests a dehydrofluorination process, which includes the gradual introduction of carbamoyl fluoride in a dissolved or finely dispersed state in a solvent into a solvent heel at a temperature at least 80°C, Applicants submit that the Official Action has not given full consideration to all of the claim features, i.e., patentable weight must be given to "gradually introducing carbamoyl fluoride in a dissolved or finely dispersed state"; "in a solvent"; and "into a solvent heel at a temperature of at least 80°C," in Claim 1 in judging the patentability of Claim 9 over GB '898.

For at least these reasons, Claim 9 is patentable over GB '898. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 18 stands rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not adequately described in the specification. For at least the reasons that follow, withdrawal of the rejection is in order.

The Official Action asserts that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. (See Official Action at page 5.) In particular, the Official Action asserts that in the instant case the rejected claims recite a 70% yield of isocyanate. The Official Action further asserts that "... the disclosure must contain sufficient information to enable one skilled in the

pertinent art to use this invention without undue experimentation." The Official Action asserts that given the disclosure does [not] teach those of ordinary skill how to select appropriate reaction conditions to increase the yield of isocyanate beyond those steps known in the prior art. (See Official Action at page 5.) Applicants respectfully disagree.

In particular, Applicants believe that the specification does disclose enough to enable one of ordinary skill in the art to practice the invention without undue experimentation. Specifically, it has been decided that some experimentation is often expected in unpredictable areas or technologies. (See, *In re Angstadt*, 537 F.2d at 503, 190 U.S.P.Q. at 218.) Furthermore, it is understood that the test for undue experimentation is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention claimed. (See *Johns Hopkins University v. Cellpro, Inc.*, 152 F.3d 1342, 47 U.S.P.Q. 2d 1703 (Fed. Cir. 1998).) In this regard, Applicants submit that the instant specification provides Examples, wherein Applicants describe the steps used in exemplary embodiments of the claimed dehydrofluorination process. Furthermore, a Table is provided, which presents the results of the experiments conducted in the Examples. (See specification at pages 9-13.) Also, the comments concerning the results obtained by the experiments of the Examples provide additional guidance as to the nature and kind of process steps that can be used to achieve a high yield. For example, the comments at pages 14 and 15 of the specification demonstrate that in

exemplary embodiments it may be useful to gradually add the carbamoyl fluoride to achieve a good yield.

Thus, even though it has been decided that it may not be necessary to have any working embodiments at all in order to satisfy the requirements of §112, first paragraph, even in the chemical arts, the present application includes working embodiments as well as comments concerning process steps and reaction parameters, which can be used to achieve acceptable results. (See *In re Strahelovitz*, 668 F.2d 1129, 212 U.S.P.Q. 651 (CCPA 1982).)

Nevertheless, in order to provide further clarification, Applicants have amended Claim 18 to further recite gradually introducing the carbamoyl fluoride in a dissolved or finely dispersed state in a solvent at a temperature of at least about 80°C.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of the §112, first paragraph, rejection.

Claim 18 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite. For at least the reasons that follow, withdrawal of the rejection is in order.

The Official Action asserts that Claim 18 fails to specify that the yield of isocyanate is at least 70%. (See Official Action at page 7.) In addition, the Official Action asserts that Claim 17 lacks essential steps since the steps of the process are generally known and the claim fails to specify those additional steps that would allow one of ordinary skill to increase the yield of the reaction. (Applicants assume that the Official Action intended to refer to Claim 18 instead of Claim 17 since the rejection relates to Claim 18.) (See Official Action at page 7.)

Applicants submit that Claim 18 particularly points out and distinctly claims the subject matter which Applicants regard as their invention. That is, because the scope of subject matter embraced by the claim is clear, and Applicants have not otherwise indicated that they intend the claim to be of different scope, Claim 18 particularly points out and distinctly claims the subject matter which Applicants regard as their invention. (See *In re Borkowski*, 422 F.2d 904, 164 U.S.P.Q. 642 (CCPA 1970).) The Federal Circuit has indicated in a number of §112, second paragraph, cases, that definiteness of claim language must be analyzed, not in a vacuum, but in light of (1) the content of the particular application disclosure, (2) the teachings of the prior art, and (3) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. (See, for example, *In re Marosi*, 710 F.2d 799, 218 U.S.P.Q. 289 (Fed. Cir. 1983).) The purpose of claims is not to explain the technology or how it works, but to state the legal boundaries of the patent grant. The claim is not "indefinite" simply because it is hard to understand when viewed without the benefit of the specification. (See *S3 Inc. v. nVidia Corp.*, 259 F.3d 1364, 59 U.S.P.Q. 2d 1745 (Fed. Cir. 2001).)

Applicants submit that the meaning of the words in Claim 18 is clear when read in light of the content of the application's disclosure, teachings of the prior art and when interpreted by those possessing the ordinary level of skill in the art. See, the specification, for example at the Examples at pages 9-11, the results presented in the Table on pages 12-13, and the comments concerning those results presented on pages 14 and 15 of the specification. Specifically, Applicants submit that one of ordinary skill in the art having read the disclosure at the above pages, would readily understand what the legal boundaries of Claim 18 are.

Nevertheless, to provide further clarification, Applicants have amended Claim 18 to further recite that the process comprises gradually adding the carbamoyl fluoride in a dissolved or finely dispersed state in a solvent at a temperature at least equal to 80°C. Thus, upon reading the language of Claim 18, as amended, and in view of the disclosure at pages 9-15 of the specification, Applicants submit that one would readily understand that Claim 18 defines a process which achieves a 70% or greater yield of isocyanate by gradually adding carbamoyl fluoride in a dissolved or finely dispersed state in a solvent at the specified reaction temperature.

Accordingly, Applicants submit that because one skilled in the art would be able to tell with a reasonable degree of certainty whether his or her conduct is within or outside the scope of Claim 18, Claim 18 is neither vague nor indefinite. (See *In re Borkowski*.)

For at least these reasons, Applicants respectfully request reconsideration and withdrawal of the §112, second paragraph, rejection.

As a final matter, Applicants have added new Claims 19-24 to further define exemplary embodiments. Support for these amendments can be found in the specification at least at pages 5-6. Applicants respectfully submit that because the combinations of claimed features recited in new Claims 19-24 are neither disclosed nor suggest by the cited references, Claims 19-24 are also in condition for allowance.

From the foregoing, Applicants earnestly solicit further and favorable action in the form of a Notice of Allowance.

If there are any questions concerning this paper or the application in general, Applicants invite the Examiner to telephone the undersigned at the Examiner's earliest convenience.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: February 28, 2005

By: 

Martin A. Bruehs

Registration No. 45,635

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620